RECENT LITERATURE

Edited by Jerome A. Jackson

BANDING AND LONGEVITY

(see 1, 8, 29, 38)

MIGRATION, ORIENTATION, AND HOMING

(see also 25, 29, 39, 40)

1. **The control of partial migration in birds: A review.** P. Berthold. 1984. The Ring 10:253-265.—Berthold reviewed the pertinent literature pertaining to factors controlling migration in species where only a portion of the population exhibits migratory behavior. Laboratory studies with the Blackcap (*Sylvia atricapilla*), European Robin (*Erithacus rubecula*), and European Blackbird (*Turdus merula*), as well as reexamination of data from a banded Song Sparrow (*Melospiza melodia*) population, were used to support the hypothesis of genetic control of partially migratory behavior in these species. Possible mechanisms for this genetic controlling system were discussed as well as the interrelationships between genetic and environmental factors in maintaining partially migratory species. While there is strong evidence for the genetic control of migratory behavior in these species, whether or not similar controlling systems are present in all partially migratory birds remains to be determined. In addition, whether this genetic system is polymorphic or dimorphic, and how it is manifested in the physiological processes of migrant and nonmigrant individuals, will have to be explored before the basis of partial migration is fully understood.—Bruce G. Peterjohn.

POPULATION DYNAMICS

(see also 1, 9, 10, 18, 24)

2. **Population and breeding biology of Marsh Harriers in Britain Since 1900.** J. C. Underhill-Day. 1984. J. Appl. Ecol. 21:773-787.—This is an overview of the status of the Marsh Harrier (*Circus aeruginosus*) in Britain from 1900–1982. Data summarized are from letters, unpublished data, archival material, bird reports, egg collections, etc. Population fluctuations suggest that they were relatively stable from 1900–1925, and then rose slightly, with marked increases in 1941 and 1943. From 1946–1958 there was a fairly steady increase in numbers until the late 1950s (and also 1960s). In 1970 the population reached a low and has been on a steady path of increase since then. Prey availability, habitat loss, and pesticide use were investigated as possible causes of fluctuation in population levels. It was noted that males mated to 2 or 3 females fledged on the average more young than single pairs. The mean number of fledged young per nest covering the study period was 2.2 ± 0.08, and 2.91 ± 0.07 per successful nest. Fledged brood sizes were significantly lower than other N.W. European areas studied with the exception of W. Germany. The largest known cause of nest failure was desertion. Human disturbance was also noted as a factor (photography, reed carting, fishing, boating, walking, and farming). Clutch sizes were reported for only 30% of the breeding records, with mean clutch sizes reported as 4.61 ± 0.14 and 4.87 ± 0.18 for successful nests.—R. W. Colburn.

3. **Early fledgling mortality and the timing of juvenile dispersal in the Marsh Tit *Parus palustris*.** J.-Å. Nilsson and H. G. Smith. 1985. Ornis Scand. 16:293-298.—In southern Sweden, young Marsh Tits dispersed from their parents' territory 12–16 d after leaving the nest. Mortality during the predispersal period varied from 1.2–18.6% over 2 yr. Nestmates did not disperse at the same time, and early dispersers were significantly larger (both in mass and wing length) than late dispersers. Parental aggression toward offspring was recorded only twice during 122 h of observation. Thus, the authors reject parent-offspring conflict as a factor in the timing of juvenile dispersal. Instead, young probably disperse on their own as soon as they develop adequate feeding skills. In theory, the sooner a young Marsh Tit disperses, the better its chances of obtaining a good wintering site.—Jeffrey S. Marks.

4. Temporal and spatial dynamics of waterfowl populations in a wetland area—a community ecological approach. H. Poysa. 1984. Ornis Fenn. 61:99–108.—Island biogeography theory was used to compare waterfowl populations censused during the period 1946–1954, to populations in 1980–1983. The "island" studied was a closed arm of a wetland lake in SE Finland. The data for the 1946–1954 period are derived from censuses of undescribed methodology conducted "very late in the optimal census period." The data for the two time periods were different and as may be expected, the 1980–1983 censuses conducted at the appropriate time, indicated higher population levels of waterfowl. Extensive analyses, e.g., comparisons based on diversity indices, product-moment correlation coefficients, and the principal axis method of factor analysis, were used to compare the population dynamics between groups of species. This study was fraught with so many methodological problems that little of ecological value can be gleaned from the analyses.—Lise A. Hanners.

NESTING AND REPRODUCTION

(see also 2, 19, 23, 26, 29, 32, 39, 40)

5. Breeding strategies of the Blue Tit and Coal Tit (*Parus*) in mainland and island Mediterranean habitats: a comparison. J. Blondel. 1985. J. Anim. Ecol. 54:531–556.—Clutch size and factors affecting clutch size are examined for Blue Tits (*Parus caeruleus*) and Coal Tits (*P. ater*) for a continental (Ventoux) and insular (Corsica) population. Information regarding clutch size, weather patterns, nestling success, and habitat are examined in light of Ashmole's model and Cody's K-selection hypothesis. Factors which may affect clutch size are discussed as related to the continental vs. the insular breeding patterns of tits. Blue Tits and Coal Tits raise fewer offspring in Corsica than in Ventoux. The main causes of nest failure reported are bad weather and predation by the garden dormouse (*Eliomys quercinus*) in Ventoux, whereas in Corsica it is nest desertion. Other causes of failure listed for Corsica include a high mortality rate due to the parasite *Typocalliphora lindneri* and predation by black rats (*Rattus rattus*) and weasels (*Mustela nivalis*). Weight differences between mainland nestlings and insular nestlings correlate with that of adults in the study areas (both nestlings and adults from Corsica weigh less). Food supply in the Corsica population is more stable, being a diet of spiders, while in Ventoux caterpillars (highly variable) are the main food items.—R. W. Colburn.

6. Reproduction of the Rufous Swamp Warbler *Calamocichla rufescens* ssp. in the Niayes region of northwestern Senegal. [Sur la reproduction de la Rousserolle *Calamocichla rufescens* ssp. dans la région des Niayes (Sénégal Nord-occidental).] R. de Naurois. 1985. Alauda 53:181–185. (French, English abstract.)—Rufous Swamp Warblers nest in small woods (called "niayes") of oil palms that surround ponds on the northwest coast of Senegal. This mainland form of Swamp Warbler apparently breeds only in aquatic vegetation where it ties its nests to *Typha* stems, in contrast to the insular form *C. brevipennis* (Cape Verde Swamp Warbler) which often nests in vegetable gardens, millet fields, and even shrubs in eucalyptus plantations.

Six clutches of *C. rufescens* consisted of 1–2, usually spherical eggs. They were pale gray with a bluish cast and gray or black spots, like the eggs of *C. gracilirostris* and *C. brevipennis*.

Nesting in the niayes occurred in April-June before the beginning of the monsoon season. Unfortunately, the author's field work was too limited to determine exactly when the nesting season begins, or even if it consists of a single long period between April and June or of two periods, one in April and the other in June–July.—Michael D. Kern.

7. Some observations about the nesting of the Shag, *Phalacrocorax aristotelis*, at Chausey, the English Channel. [Quelques données sur la nidification du Cormoran huppé, *Phalacrocorax aristotelis*, à Chausey, Manche] G. Debout. 1985. Alauda 53:161–166. (French, English summary.)—The colony of Shags (*Phalacrocorax a. aristotelis*) in the Chausey Islands archipelago, Normandy, is one of the major colonies near the Bay of Mont-Saint-Michel. There Shags occupy 10 of the 12 uninhabited "islands" (defined as land masses with a surface area >7500 m^2), 10 of the 24 "islets" (2000–6000 m^2), and three of the "small islets" (<2000 m²) in the archipelago. In 1984 (30 May–3 June) there were 335 nests in the archipelago, from which the author deduced that the colony consisted of 350–400 pairs of birds.

Some nests were exposed (14%), but most were concealed under boulders (48%) or vegetation (38%). This is apparently the first time that anyone has reported that Shags build their nests under vegetation, although their relative *P. a. desmarestii* in Corsica nests under mastic trees. This adaptation permits the birds to use the center of the land masses in the archipelago as breeding sites, i.e., to nest in areas frequently covered with thorny shrubs that are difficult for men or gulls to penetrate.

Shags apparently selected the plant species under which they nested. They avoided brambles (*Rubus*), even though they were abundant, preferring instead butcher's broom (*Ruscus aculeatus*; 38 of 97 nests were concealed under this species) or ivy (*Hedera helix*; 49 of 97 nests). Two nests were found under brambles, one under a privet (*Ligustrum vulgare*), and five others under mixed vegetation.

Debout's census data suggest that each nesting season, Shags occupy "islets" and perhaps "small islets" before they occupy "islands," even though the latter support more nesting birds than "islets." There were proportionately (and significantly) more nests with chicks in them on "islets" than on "islands" (57% vs. 35%, respectively), possibly because older, more experienced birds in the population selected "islets" as nest sites.

Normal clutch size was 3 eggs. Normal brood size was 2 chicks. Although the average clutch size on the three types of land masses in the archipelago was about the same (2.40–2.73 eggs), the average brood size on "islets" (2.54) and "small islets" (2.25) far exceeded that on "islands" (1.67). This difference in fecundity is also probably related to the fact that older, more experienced Shags nested preferentially on the smaller land masses in the archipelago.—Michael D. Kern.

8. The effect of age and pair bond on the breeding success of Great Tits *Parus major*. C. M. Perrins and R. H. McCleery. 1985. Ibis 127:306–315.—Age and pair bond and their influence on breeding success were examined in a long term study (1964–1981) from the now famous banded population of Great Tits (*Parus major*) in Wytham woods, England. This population has provided some classic population and behavioral studies and, as this paper demonstrates, it continues to provide important data. The recent work is based upon 1454 nests which fledged at least one young and for which the identities of both parents were known.

The results suggest that age of the male affected the number of fledged and surviving young and laying date, but not clutch size. However, age of the female affected laying date and clutch size, but not the number of fledged or of surviving young. "Divorce" occurred in 33% of the pairs in which both partners survived to the next season. Pairs which split up tended to have smaller clutch sizes than those which stayed together. Higher mortality in females resulted in relatively more juvenile females in the breeding population than juvenile males, but did not produce assortative mating by age. This study, as with many of the earlier works on Great Tits, illustrates the value of long-term banding studies.—J. M. Wunderle, Jr..

9. Breeding productivity and the non-breeding element in some montane forest birds in Malawi, South-Central Africa. F. Dowsett-Lemaire. 1985. Biotropica 17:137–144.—The author assessed the nesting success and productivity of 7 species of montane forest birds on the Nyika Plateau in Malawi. The general habitat is rolling montane grasslands with scattered patches of evergreen forest. Study areas were in small (0.16–1.80 ha) patches of forest. Although replacement of failed clutches occurred in most species, only the Moustached Green Tinkerbird (*Pogoniulus leucomystax*) appears to have produced second clutches after a successful first clutch. Individuals of most species studied did not appear to begin breeding until their second year. Nest success varied from 0.4 to 1.9 young/nest/year. All 21 species captured during the study showed evidence of nonbreeding adult individuals. The nonbreeding adult population of 2 intensively studied passerine species was 50–80% of the total adult population.—Robert C. Beason.

10. Risk of nest predation in three species of hole nesting owls: influence on choice of nesting habitat and incubation behaviour. G. A. Sonerud. 1985. Ornis Scand. 16:261–269.—Pine martens (*Martes martes*) are predators of cavity-nesting owls in Eurasian boreal forests. Because of their small size, Pygmy Owls (*Glaucidium passerinum*) can nest in holes that exclude martens. Nest holes of Tengmalm's [Boreal] Owls (*Aegolius funereus*) and Hawk Owls (*Surnia ulula*), however, always are large enough for martens to enter. How, then, do the larger cavity-nesting owls minimize their risk to mammalian predators?

From 1970–1983, Sonerud monitored nests of Tengmalm's Owls (n = 187), Hawk Owls (n = 12), and Pygmy Owls (n = 20) in 3 study areas in southeastern Norway. Martens were common in 2 study areas and rare in the third. Nest predation was higher for Tengmalm's Owls (37%) and Hawk Owls (33%) than for Pygmy Owls (5%), but was very low (2%) for Tengmalm's Owls in the study area with few martens (no Hawk Owls nested in this area). Both martens and Pygmy Owls preferred nest boxes (Pygmy Owls in boxes with small holes) in mature conifer forest. Tengmalm's and Hawk owls preferred nest boxes in clear-cuts and openings adjacent to mature forest and avoided boxes in choice marten habitat.

Sonerud also monitored the reaction of female owls to a simulated mammalian predator at the nest tree. Tengmalm's and Hawk owls appeared at the nest hole in 67–71% of the cases where Sonerud scraped the trunk with his hand, whereas Pygmy Owls did so only 16% of the time. Appearing at the nest hole in response to disturbance probably enables females to escape mammalian predators. This long-term study convincingly demonstrates how the risk of predation can influence nest-site selection and behavior of cavity-nesting owls.—Jeffrey S. Marks.

11. On the adaptive basis for hatching asynchrony: brood reduction, nest failure and asynchronous hatching in Snow Buntings. D. J. T. Hussell. 1985. Ornis Scand. 16: 205–212.—Hussell presents a modified version of Clark and Wilson's (Q. Rev. Biol. 56: 253–277, 1981) nest failure model for hatching asynchrony (see also Hussell, Am. Nat. 126:123–128, 1985). The relevant survival probabilities in the model, P_0, from the start of laying to the start of incubation, and P_3, from the first to last young fledged, are very difficult to obtain. Using survival data from Snow Bunting (*Plectrophenax nivalis*) nests, Hussell's model accurately predicted the observed hatching asynchrony. Although his estimates of P_0 and P_3 are the best available, Hussell cautions that they are based on small samples and have large standard errors. Additional tests of the model must be based on "adequate samples of appropriate survival data (P_0 and P_3) and . . . accurate determinations of hatching asynchrony for different clutch sizes."—Jeffrey S. Marks.

12. On the eggshell thickness and reproduction of the Peregrine Falcon *Falco peregrinus* in Finland. H. Linden, T. Nygard, and M. Wikman. 1984. Ornis Fenn. 61: 116–120.—Eggshell thickness from 6 Peregrine clutches from north of 66°N and 4 clutches from south of 66°N were compared to determine geographical variation within Finland and its relationship to breeding success and growth of chicks. An X-ray back-scatter method was used to determine the amount of calcium per unit area. Northern clutches had about 10% thicker eggshells than southern clutches, resulting in a higher evaporation rate from the southern eggs. The relative production of young and their growth rates were significantly dependent on the calcium index. The southern population of Peregrines has been essentially eliminated with the exception of bog-nesting Peregrines. For unknown reasons, almost all cliff-nesting Peregrines have been eliminated. The hypothesis proposed is that the high humidity of bogs decreases the evaporation rate from contaminated eggs and leads to higher success in this habitat.—Lise A. Hanners.

13. Estimation of nesting success and frequency of re-laying in Willow Grouse *Lagopus lagopus*. S. Myrberget, K. E. Erikstad, R. Blom, and T. K. Spidso. 1985. Ornis Fenn. 62:9–12.—The nesting success observed for a population of Willow Grouse (41%) was compared to that estimated (42%) by the Mayfield method to determine the reliability of the latter method. Mayfield's method was reliable and was used to develop a method for calculating the frequency of re-laying based on these estimates of nesting success. About 60% of the hens that lost their initial nests laid replacement clutches.—Lise A. Hanners.

BEHAVIOR

(see also 3, 10, 26, 28, 35, 36, 39)

14. Little Ringed Plovers and Common Terns cool eggs and chicks by wetting them. [Du refroidissement par mouillage des oeufs et des poussins chez le Petit Gravelot et la Sterne pierregarin.] J.-Y. Berthelot. 1985. Nos Oiseaux 38:49–58. (French, English summary.)—The author observed (and provides photographic documentation of) belly-soaking by incubating or brooding Ringed Plovers (*Charadrius dubius*) and Common Terns (*Sterna hirundo*), but not by Black-headed Gulls (*Larus ridibundus*), during an unusually hot and dry summer, 1976, on sand bars of the Loire River, central France. His report ". . . adds nothing new, except that it probably confirms that belly-soaking [occurs among terns and plovers] in France" (p. 54). Similar observations were reported earlier for the same species by, among others, Grant (*J. Field Ornithol.* 52:244, 1981).

The author points out that birds nesting on islands in the Loire River generally enjoy moderate weather during the breeding season; yet, the terns and plovers here immediately belly-soaked when exposed to extreme heat in 1976. Hence, their belly-soaking behavior is innate, rather than learned. Since Black-headed Gulls did not belly-soak under these exceptionally hot conditions, the behavior is not innate in them and they are at a selective disadvantage under such thermal stress. This may explain why plovers and terns are more successful than gulls in colonizing thermally unstable areas.

The author also notes that the nest reliefs of Ringed Plovers occurred at about 10-min intervals during the hottest hours of the day and that belly-soaking occurred only at these times—none was seen during the morning or when the sky was overcast. Although he was able to get within 2 m of one plover's nest, he could not see if the chicks drank from the feathers, like sandgrouse do. When exposed to hot ambient conditions, incubating or brooding adults of all three species panted, but only terns and plovers ruffled their plumage.—Michael D. Kern.

15. Activity patterns and time-budget in the Goshawk *Accipiter gentilis* in a boreal forest area in Sweden. P. Widen. 1984. Ornis Fenn. 61:109–112.—Four male and 4 female Goshawks were trapped and equipped with radio transmitters to record flight and non-flight activity. A total of 1015 h of observations was recorded. Activity data were also recorded before, during, and after predation by 3 different Goshawks on 16 kills. Results indicated that males spent significantly more time in flight (4%) than females (3.5%). Males roosted later in the evening than females, accounting for their higher activity over a 24-h period. Male flight activity was fairly evenly distributed over the non-roosting period, while females had a peak in flight activity between 0800–0900, when their prey (squirrels) were most active. Flights were of short duration, separated by long periods of inactivity. The flight activity of Goshawks increased with increasing hunger. In most cases, Goshawks made a kill within each two-day period and the number of flights increased statistically from days 0–2. Goshawks in boreal habitats hunt by more frequent flying to flush prey by surprise, while Goshawks in open habitats fly less often and frequently attack prey from a perch. The reasons for sexual differences in flight activity were unclear to the author.—Lise A. Hanners.

16. Foraging success of Rooks *Corvus frugilegus* in mixed-species flocks of different sizes. J. Hoglund. 1985. Ornis Fenn. 62:19–22.—The foraging success of adult Rooks in flocks of greater than 10 individuals was higher than adults in flocks of 1–10 birds. There were no differences in the foraging success of juvenile Rooks in different flock sizes; adult birds were significantly more successful than juveniles. Larger feeding flocks formed in response to changes in local food availability. Hoglund suggested that larger flocks may be more successful because more eyes are available to watch for predators, but no data were presented that indicated that predation was higher in smaller flocks.—Lise A. Hanners.

ECOLOGY

(see also 4, 7, 12, 23, 24, 26, 30, 36, 39, 41)

17. Use of tree species by forest birds during winter and summer. M. L. Morrison, I. C. Timossi, K. A. With, and P. N. Manley. 1985. J. Wildl. Manage. 49:1098–1102.—The objective of this study "was to determine if the use of tree species by birds differed between winter and summer in the western Sierra Nevada." Species studied in El Dorado Co., California, were Hairy Woodpecker (*Picoides villosus*), White-headed Woodpecker (*P. albolarvatus*), Mountain and Chestnut-backed chickadees (*Parus gambeli* and *P. rufescens*), Red-breasted Nuthatch (*Sitta canadensis*), Brown Creeper (*Certhia americana*), and Golden- and Ruby-crowned kinglets (*Regulus satrapa* and *R. calendula*). All bird species used incense cedar (*Calocedrus decurrens*) more frequently in winter than in summer, apparently due to the relative ease of probing for insects beneath the loose, flaky bark of this species. The authors suggest that removal of incense cedar from western Sierra Nevada forests may lower the overwinter survival of birds.—Richard A. Lent.

18. Site-fidelity and survival rates of some montane forest birds in Malawi, South-Central Africa. R. J. Dowsett. 1985. Biotropica 17:145–154.—This paper reports on the survivorship of 2030 individuals of 33 species banded between 1972 and 1982, and on the movements of banded individuals between 1979 and 1982 on the Nyika Plateau of Malawi. Most territorial adults were sedentary, especially during the breeding season. Some adults maintained the same territories for 10 yr. While most species maintained continuous pair-bonds, female Starred Robins (*Pogonocichla stellata*) left the study area during the nonbreeding season and returned to the same territory yearly. The mean annual mortality rate for the four species which were studied most intensively was low (13.2%–22.2%). There did not appear to be any relationship between body size and longevity.—Robert C. Beason.

19. Territorial breakdown and brood movements in Willow Grouse *Lagopus l. lagopus*. K. E. Erikstad. 1985. Ornis Scand. 16:95–98.—Erikstad mapped the territories of all male Willow Grouse on a 125-ha island off northern Norway and followed 15 radio-tagged broods to determine if brood movements were confined to the natal territory. Males defended a territory that contained the nest and then accompanied the hen and chicks for the entire brood-rearing period. Only 4 broods spent most of their time within their parents' territories. The others were variable in their movements, with some leaving the territory within 3 d and never returning. Some broods traveled widely and visited up to 9 other territories. Neither survival nor growth of chicks were influenced by the amount of time that a brood spent on its natal territory. Erikstad concludes that "securing good feeding areas for the chicks is not a dominant factor for the cock when he establishes the breeding territory."—Jeffrey S. Marks.

20. Habitat selection of farmland feeding geese in West Jutland, Denmark: an example of a niche shift. J. Madsen. 1985. Ornis Scand. 16:140–144.—When Greylag Geese (*Anser anser*) arrive in the study area in September, they feed both in stubble and undersown stubble (stubble seeded with grass). Pink-footed Geese (*A. brachyrhynchus*) arrive in October and selectively feed in undersown stubble. After the pink-foots arrive, greylags increase their use of stubble and avoid undersown stubble. Greylags then leave the area in mid-October, while pink-foots continue to feed in undersown stubble until mid-November. Greylags are larger than pink-foots, and mixed flocks occur without signs of aggression. Madsen thus rejects interference competition as an explanation for the greylag "niche shift." Greylags feed in smaller flocks than do pink-foots (mean of 70 vs. 1927 birds/flock), and Madsen suggests that greylags cannot forage profitably with large flocks of pink-foots in the latters' preferred habitat.—Jeffrey S. Marks.

21. Habitat shift of the Willow Tit *Parus montanus* in the absence of the Marsh Tit *Parus palustris*. R. V. Alatalo, L. Gustafsson, A. Lundberg, and S. Ulfstrand. 1985. Ornis Scand. 16:121–128.—The Willow Tit and the Marsh Tit are sibling species that differ in habitat selection. Willow Tits forage primarily in coniferous forest, whereas Marsh Tits prefer rich deciduous woodland. These authors compare winter habitat distribution of

Willow Tits in central Sweden, where Marsh Tits occur, with that on the Åland Islands, where Marsh Tits are absent.

As expected, Willow Tits foraged in conifers on the mainland. On the islands, however, they expanded their foraging niche into deciduous woodland. Six other species in the "tit guild" that occurred both on the mainland and the islands showed no shift in foraging habitat, strongly suggesting that the Willow Tit niche shift was not due to habitat differences between sites. The authors interpret the habitat expansion by Willow Tits as competitive release from Marsh Tits. Experimental introduction of Marsh Tits to the Åland Islands "unfortunately . . . is not feasible under the present legislation."—Jeffrey S. Marks.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(see 35, 39)

CONSERVATION AND ENVIRONMENTAL QUALITY

(see also 2)

22. Ingestion of petroleum by seabirds can serve as a monitor of water quality. P. D. Boersma. 1986. Science 231:373–376.—Foraging seabirds continually sample the ocean and can be used to monitor the presence of pollutants such as DDT, trace metals, PCBs, and petroleum. Boersma used Procellariiformes for his study because: (1) they forage at the ocean surface where pollutants may concentrate and may be ingested with their normal food, (2) by foraging over large areas and feeding intermittently they provide "spot samples" of a large area, (3) oil from their food accumulates and is digested slowly, (4) many species readily regurgitate their oil at predators or humans at their nest burrows and hence samples of stomach contents and pollutants can be taken without harm to the birds, and (5) this group is widely distributed throughout the oceans of the world.

Storm petrels of several species were captured at their burrows in the Barren Islands of the Gulf of Alaska and their regurgitate collected and analyzed for the presence of fossil fuel hydrocarbons. The incidence of gut samples containing fossil fuel hydrocarbons (dirty samples) increased significantly after oil spills, and significantly more birds regurgitated dirty samples after large nearby spills than small distant ones. This is one of the first reports of marine birds ingesting sublethal doses of oil from sources of low-level long-term pollution or from oil spills.—J. M. Wunderle, Jr..

PARASITES AND DISEASES

(see 5)

PHYSIOLOGY

(see also 12, 14, 39)

23. Influences of weather on reproductive function in female Song Sparrows, *Melospiza melodia*. J. C. Wingfield. 1985. J. Zool., Lond. 205:545–558.—This is a report of data collected on levels of lutenizing hormone, testosterone, estradiol, and corticosterone by radioimmuno-assay in female Song Sparrows in conjunction with a severe winter, an aseasonal spring snowstorm, and a period of wet stormy weather during the parental phase of the breeding cycle.—R. W. Colburn.

MORPHOLOGY AND ANATOMY

(see also 3, 31, 36, 39)

24. Annual variation in mean body size of a Brambling *Fringilla montifringilla* population. O. Hogstad. 1985. Ornis Fenn. 62:13–18.—Wing lengths and body weights of 91 male and 49 female Bramblings were measured among 8 breeding seasons in central Norway. Significant annual variation in mean wing length of males was found. Four hypotheses to explain this variation were discussed: (1) feeding conditions varied during the rearing periods of different males, (2) there had been an influx of larger-sized birds from northerly populations in different years, (3) variation in habitat quality between years caused variation in male size, and (4) the age structure of the population varied between years, and size was related to age. Bramblings are an irruptive species lacking site tenacity and therefore little information was available on rearing environments for the birds measured. Measurements of Bramblings throughout Scandinavia showed no clinal increase in wing length with increasing latitude, which made hypothesis (2) unlikely. Comparisons of male wing lengths with insect availability did reveal a positive relationship and therefore yearly habitat quality may influence male size. Finally, a positive relationship was found between the mean wing lengths of males and the ratio of larger adults to smaller yearlings.

Hogstad concludes that intraspecific competition can explain it all, because the proportion of older and larger birds with a high social rank is probably highest in breeding seasons in which habitat quality is optimal and lowest in sub-optimal years. None of the four hypotheses outlined directly addresses competition, and this conclusion weakens an otherwise interesting presentation.—Lise A. Hanners.

PLUMAGES AND MOLTS

(see also 26, 39)

25. Moult patterns and moult migration in the Black-necked Grebe *Podiceps nigricollis*. R. W. Storer and J. R. Jehl, Jr. 1985. Ornis Scand. 16:253–260.—Up to 750,000 Black-necked [Eared] Grebes congregate at Mono Lake, California in late summer to undergo their prebasic molt. Both sexes and all age classes are present. This molt migration is by far the largest documented for any species of grebe or waterfowl. The timing and duration of the molt are "believed to be an adaptation for exploiting the superabundant food source (brine shrimp *Artemia* sp.)" available at Mono Lake. A similar molt migration probably occurs at Great Salt Lake, Utah. The authors also describe each molt from Prebasic I through Prebasic III based on more than 200 grebes collected or salvaged at Mono Lake.—Jeffrey S. Marks.

ZOOGEOGRAPHY AND DISTRIBUTION

(see also 4, 7, 12, 21, 24, 39, 40, 41)

26. Some aspects of the biology of the Red Munia (*Amandava amandava* (L.)) in the Guadiana basin of Extremadura, Spain. [Quelques aspects de la biologie du Bengali rouge (*Amandava amandava* (L.)) dans le bassin du Guadiana (Extrémadoure, Espagne)]. F. de Lope, J. Guerrero, C. de la Cruz, and E. da Silva. 1985. Alauda 53:167–180. (French, English abstract.)—Although Red Munia (*Amandava amandava*) are indigenous to India, southeastern Asia, and part of China, a large group of them also occurs in the Guadiana basin of Spain where it is apparently sedentary, but nevertheless expanding its range. The authors suggest (*sans* evidence) that the Spanish population originated from birds that escaped from captivity prior to 1978. Red Munias now occupy marshes and riversides in a 60-km stretch of the Guadiana basin between Badajoz and Villanueva de la Serena.

The authors describe the natural history of this Spanish population. They present information about diet (strictly granivorous), body size (adults and during development; 9 different parameters of size periodically measured on growing chicks); sex ratio (55% males); molt (pattern of molt of the primary remiges is that typical of passerines except that primary 10 may drop after 5 or 6, to be followed by 7, 8, and 9; molt of the secondaries generally does not follow the typical passerine pattern: 1-6-2-3-4-5, rather than the typical 1-2-3-4-5-6; 15–17 d are required for the complete development of a primary; postnuptial molt occurs in November and December, prenuptial molt in April–July; molt in nestlings is also described); and the nest (domed; side entrance; no entrance tube). The authors also describe reproduction, which I summarize below.

One of the most notable aspects of the breeding season of Red Munias in the Guadiana basin is its late start: pair-formation doesn't begin until mid-June and nesting is delayed until July. As a result of this late start (which, by the way, also occurs in populations of munias from northwest India), Red Munias do not compete with native species for nesting habitat. Although munias are highly gregarious (forming, e.g., communal roosts) during most of their life cycle, they nest solitarily. Based on my experience, some aspects of their breeding biology came as a surprise: e.g., *both* sexes build the nest, incubate the eggs, and brood the chicks, as well as feed the nestlings. Further, the nestlings are only fed seeds. The incubation period (13–14 days) and brood period (18–20 days) are also longer than I expected. Clutch size was 4–7 eggs (mean = 5.31) and brood size 1–7 chicks (mean = 4.53 chicks). Nests with small clutches failed more often than did nests with larger clutches. The chicks hatched asynchronously.—Michael D. Kern.

27. Species-number and area-size relationships of central European breeding birds. [Artenazhl und Flach engrosse am Beispiel der Brutvogel Mitteleuropas]. G. Banse and E. Bezzel. 1984. J. Ornithol. 125:291–305. [German, English summary.]—The authors examine the species-area relationship using the breeding bird data of central Europe. Area sizes were categorized into 7 groups which differed by an order of magnitude ranging from <1 km^2 to $>100{,}000$ km^2. Based on 711 locations, the total number of species of breeding birds (S) can be expressed by $S = 41.2 \times A^{0.14}$, where A is area in km^2. For passerines $S = 31.4 \times A^{0.10}$, for terrestrial non-passerines $S = 7.4 \times A^{0.20}$, and for waterbirds $S = 1.9 \times A^{0.25}$. The relationships do not hold for small areas (less than a few km^2), possibly because of specialized habitat requirements. Unfortunately the authors do not present any of the data their calculations are based on. Even a scatterplot showing how well the data fit the predictions would have been helpful.—Robert C. Beason.

28. The Sâo Tomé Spinetailed Swift *Chaetura (Rhaphidura) thomensis* Hartert 1900, endemic to Sâo Tomé and Principe Islands (Gulf of Guinea). [*Chaetura* (*Rhaphidura*) *thomensis*] Hartert 1900, endémique des îles de Sāo Tomé et Principe (golfe de Guinée). R. de Naurois. 1985. Alauda 53:209–222. (French, English summary.)—The Sâo Tomé Spinetailed Swift is a resident of Sâo Tomé I. (at elevations between 200 and 800 m in the east—where the House Swift (*Apus affinis*), which it seems to avoid, occupies coastal areas below 300 m elevation; between sea level and 400 m in the west), Principe I. (where it forms mixed flocks with House Swifts), and Prince I. Spinetailed Swifts inhabit secondary forest, where they forage in small groups of 8-10 birds, circling the trees and making figure eights 5–10 m above the ground. They are the only Apodidae on the islands that use the aerial plankton of the forest for food. Their call is a sharp, high-pitched whistle.

Their cup-shaped nest is fashioned from twigs glued together with saliva. This unlined rigid structure is most commonly attached to the interior wall of a hollow tree 1–4 m above an entrance to the tree's interior. Occasionally, nests are glued to vertical faces in the complicated root systems of large trees, e.g., silk-cotton trees (*Ceiba pentandra*). In such cases, they are just above the ground. The clutch of 2–4, round, white eggs (for which the author gives dimensions) is laid between early August (before the rainy season) and the end of October (the height of the rainy season).

C. thomensis differs in several ways from its mainland congener, *C. sabini*. It is smaller than *sabini* and its tail is longer. The streaks on its rump, abdomen, and upper- and under-tail coverts are generally wider than those of *sabini*. Its upper- and under-tail coverts are shorter than the tail; those of *sabini* equal the tail in length. The blackish throat and chest gradually blend into the white of the abdomen in *thomensis*, but do so abruptly in *sabini*. The dark crown and back of *thomensis* are black and have a blue-green reflectance, whereas those areas of *sabini* are brown and exhibit a blue reflectance. The tail spines of *thomensis* are shorter than those of *sabini*.

Chicks (the author only examined 2 of them) were feathered at 2 weeks of age and had plumage like that of the adult. The same was also usually true of immature swifts, but there were enough exceptions to suggest that this species has a second or immature plumage.—Michael D. Kern.

29. The birds of northwest Africa. Supplemental notes. [Les oiseaux du Nord-Ouest de l'Afrique. Notes complémentaires.] N. Mayaud. 1985. Alauda 53:186–208. (French.)—In this, the sixth in a series of articles that appeared in *Alauda* between 1982 and 1985, Mayaud describes the current status of swifts, rollers, kingfishers, bee eaters, hoopoes, woodpeckers, and larks in northwest Africa. He presents recent information about their distribution, breeding and wintering ranges, migration, vagrancy, abundance, and breeding (e.g., egg-laying dates, clutch size, egg color and markings). The paper also contains discussions of the systematics of the House Swift (*Apus affinis*), Algerian Green Woodpecker (*Picus vaillantii*), Great Spotted Woodpecker (*Picoides major*), and several species of larks.

The following are samples of the information in this paper. House Swifts are widespread in Morocco, but their colony sites change frequently. White-Rumped Swifts (*A. caffer*) use the nests of Red-rumped Swallows (*Hirundo daurica*) with which they are sympatric in the High Atlas Mountains of Morocco. Common Swifts (*A. unicolor*) were reported in Morocco recently, as were Abyssinian Rollers (*C. abyssinica*) at Nouadhibou (Mauritania) and the Oasis of Coufra (Libya). European Rollers (*Coracias garrulus*) nest in the High Atlas Mountains of Morocco and the High Sousse district of Tunisia; Shore [Horned] Larks (*Eremophila alpestris atlas*) in the Middle and High Atlas Mountains of Morocco; Black-crowned Finch Larks (*Eremopterix nigriceps*) not only in N. Senegal and Mali, but also up to 25°N latitude in Western Sahara. Many new breeding sites of the Common Kingfisher (*Alcedo atthis*) have been discovered between Tunisia and Morocco. Hoopoes (*Upupa epops*) are present year-round on the Nouadhibou peninsula in Mauritania. The range of the Great Spotted Woodpecker is discontinuous: in Tunisia, it inhabits the region between Kroumirie and Sedjenane; in Algeria the Tell Atlas and Babor Mountains in the east and the Merada Mountains in the west; it is absent from east Morocco (except in the Merada Mountains), but widespread and common in mountain ranges in central and west Morocco. This woodpecker inhabits oak-cork, cedar, fir, pine, and poplar woods. Among Sky Larks (*Alauda arvensis*) that overwinter in northwest Africa are birds from north and central Europe (the race *arvensis*), south Europe (the race *cantarella*), and Siberia (the race *dulcivox* or perhaps *kiborti*). Wood Larks (*Lullula arborea*) are altitudinal migrants which overwinter in lowland orchards of the Great Kabylie region (N. Algeria), Settat, and Agadir (Morocco). Clutch size of the Thick-billed Lark (*Ramphocoris clotbey*) tends to be smaller during dry years than in wet ones in Tunisia. Individuals of several species, including Wryneck (*Jynx torquilla*), DuPont's Lark (*Chersophilus duponti*), Lesser Short-toed Lark (*Calandrella rufescens*), Temminck's Horned Lark (*Eremophila bilopha*), Calandra Lark (*Melanocorypha calandra*), and Hoopoe Lark (*Alaemon alaudipes*), stray considerable distances from their "normal" ranges. Wrynecks of the race *mauretanica,* for example, inhabit the Tell Atlas Mountains of Algeria where they appear to be sedentary, but they occasionally appear in Morocco and Tunisia.

Recent banding data have clarified the origins and movements of many northwest African birds. Pallid Swifts (*Apus pallidus*) from Spain have been recovered at several sites in Morocco. Common Swifts (*Apus apus*) from the Netherlands, Finland, England, Switzerland, and France were also recaptured in Morocco. Alpine Swifts (*Apus melba*) from Switzerland have appeared in N. Algeria and N. Morocco. European Bee Eaters from Cape Bon (N. Tunisia) were retaken in Italy; one banded in France was recaptured in Algeria. Hoopoes from Spain, West Germany, and Belgium were found in Morocco, those from Switzerland in Algeria, and those from France in Morocco and N. Senegal. Hoopoes banded in Morocco, Tunisia, and Chad have been recovered in Czechoslovakia and Austria. Wrynecks from Lithuania and Sweden were recovered in Algeria, from Germany and Sweden in Morocco, from Czechoslovakia and Prussia in Libya, and from Hungary on Pantelleria Island off Tunisia.—Michael D. Kern.

30. Examination of the breeding birds from a fallowland in Verbois, near Russin, Geneva. [Aperçu de l'avifaune nicheuse d'une étendue en friche: les teppes de Verbois, à Russin, Genève.] D. Landenbergue and F. Turrian. 1985. Nos Oiseaux 38:59–76. (French, English summary.)—Landenbergue and Turrian identify and comment about the birds that nested in two abandoned gravel pits at Verbois, canton of Geneva, Switzerland, between 1978 and 1984. These gravel pits encompass 7.43 ha and are located near the Rhone River at Véré, immediately downstream from the Verbois dam. Using transect and banding data, the authors mapped the territories of 10 species during each breeding season. Unfortunately, they did so for only one of the two study areas. Although their maps don't indicate which territories were active each year, they do show how many years each territory was used.

Gravel pits at Verbois support an unusually large number of breeding species (63–68) compared with other areas of Geneva. Turtle Doves (*Streptopelia turtur*), European

Nightingales (*Luscinia megarhynchos*), Stonechats (*Saxicola torquata*), Blackcaps (*Sylvia atricapilla*), and Willow Warblers (*Phylloscopus trochilus*) were represented at Véré in densities that are the highest reported for Switzerland. Melodious Warblers (*Hippolais polyglotta*) and Yellow Hammers (*Emberiza citrinella*) were also numerous. However, many other species were present in these gravel pits in only small, sometimes variable numbers. There were only 0–2 pairs of Little Ringed Plovers (*Charadrius dubius*), for example, which is not surprising since there is presently only one potential breeding site for them at Véré. Their disappearance, here and elsewhere in Switzerland, can be traced to the loss of beaches and small gravel islands in gravel pits as they fill in. Common Kingfishers (*Alcedo atthis*; breeding density = 1 pair) and Sand Martins (*Riparia riparia*; 0–32 pairs) were poorly represented because the gravel pits did not provide suitable soil for their underground nests. The number of Wrynecks (*Jynx torquilla*; 1–3 pairs) was also small and yet, with the 2–4 nesting pairs in a nearby reserve, represents nearly half of the breeding population in the canton of Geneva. Recent cold and rainy springs probably prevented this species from nesting at Véré in 1984. Other weakly represented breeding species were Tree Pipits (*Anthus trivialis*; 1–2 pairs), Marsh Warblers (*Acrocephalus palustris*; 0–3 pairs), Eurasian Linnets (*Carduelis cannabina*; 1–3 pairs), Garden Warblers (*Sylvia borin*; 2 pairs), Cirl Buntings (*Emberiza cirlus*; 3–6 territories), and Reed Buntings (*E. schoeniclus*; 1–3 pairs).

Because the habitat in abandoned gravel pits is subject to rapid successional changes, and also because parts of it are being reclaimed for agricultural purposes, the future breeding success of several species (Little Ringed Plover, Stonechats, Whitethroats, and Reed Buntings) there is in jeopardy. However, a concerted effort was made to regularly replant hedges and clear certain parts of the study area each year since 1978. In addition, the Swiss government restricts access to parts of these gravel pits during months when the birds are nesting. Such efforts have apparently stopped the rapid loss of breeding species from the area, but their long-term effects on the avifauna are still difficult to assess.

Considerable useful demographic information about the avifauna of Véré can be found in the tables and figures that accompany this article.—Michael D. Kern.

SYSTEMATICS AND PALEONTOLOGY

(see also 28)

31. A true carinate bird from Lower Cretaceous deposits in Mongolia and other evidence of early Cretaceous birds in Asia. E. N. Kurochkin. 1985. Cretaceous Research 6:271–278.—The single fossil of *Ambiortus dementjevi* is a partial skeleton with feather impressions. Found in 1977 and described (in Russian) in 1982 (Dokladi Akademii Nauk SSR 262:452–455), it is in the Paleontological Institute in Moscow (but the American Museum of Natural History and the National Museum of Natural History have casts.

Here is an essentially modern-type bird, "about the size of a Jackdaw (*Corvus monedula*)," that was flying about Asia while the likes of *Diplodocus* and *Stegosaurus* still walked the earth. It is the earliest fossil to show a keeled sternum, typical avian shoulder girdle, and other anatomical features shared with modern birds and indicating strong powered flight. The skull was not found so that absence of teeth and type of palate are not known. In addition to the one skeleton found so far, Kurochkin reports feather imprints and amber-preservations as numerous at several early Cretaceous sites in Asia. "Some of these even preserve traces of the colour pattern." These may or may not be from *Ambiortus,* but the implication remains that birds were not rare in the early Cretaceous biota.

These findings reinforce suggestions that *Archaeopteryx,* known from only a few tens of millions of years earlier, was already on a side branch of a prospering avian radiation, and that the true origin of birds was much earlier still.—Peter F. Cannell.

EVOLUTION AND GENETICS

(see also 1, 11)

32. Shared paternity in the Acorn Woodpecker (*Melanerpes formicivorus*). N. Joste, J. D. Ligon, and P. B. Stacey. 1985. Behav. Ecol. Sociobiol. 17:39–41.—Starch-gel electrophoresis of an entire family group (including 2 males) yielded one locus for which juvenile electromorphs could only be explained by multiple paternity, assuming normal Mendelian segregation. In the words of the authors, this "provides the first documentation of multiple paternity for any avian cooperative breeder."

The results are useful as verification; at the same time they are discouraging. After "extensive effort" documentation was found for only one locus in one family group. Electrophoresis may not prove practical for quantitative studies of multiple paternity.—Peter F. Cannell.

33. **The phylogeny of the hominoid primates: a statistical analysis of the DNA-DNA hybridization data.** A. R. Templeton. 1985. Mol. Biol. Evol. 2:420–433.—The comprehensive reanalysis of bird phylogeny by Sibley and Ahlquist (see Current Ornithol. 1:245–292) includes bold and surprising results which have received praise and criticism (for some of each see Barrowclough, J. Field Ornithol. 55:507–508, 1984). Their best data (all taxa labelled) are those on primates (J. Molec. Evol. 20:2–15, 1984). Templeton has reanalyzed this using a Q-statistic, which enables one to assess the significance of alternative hypotheses. He found that a second phylogeny, refuted by Sibley and Ahlquist, is also (and equally) statistically supported by their data.

Templeton also discusses Sibley and Ahlquist's *t*-tests of rate constancy, data pointing towards a slower rate of molecular evolution in the human lineage, and possible demographic reasons. A recent paper (Koop et al., Nature 319:234–238, 1986) using sequence data, also indicates retarded evolutionary rates in the human lineage. A uniform average rate is critical to Sibley and Ahlquist's analyses. They have argued (Current Ornithol. 1:275 ff.) that such "slow-downs" have not been encountered in birds.

These are not bird data, but the implications should be of interest to all ornithologists. To date, no bird data have received independent reanalysis. Particularly in the face of recent disagreements with morphological analyses, independent corroboration of DNA-DNA hybridization results would be reassuring.—Peter F. Cannell.

FOOD AND FEEDING

(see also 5, 15, 16, 20, 26, 28, 39)

34. **Molluscs in the diet of the Song Thrush *Turdus philomelos*. Department of Somme (France).** [Les mollusques dans le régime alimentaire de la Grive musicienne *Turdus philomelos*. Dép. de la Somme (France).] F. Sueur. 1985. Nos Oiseaux 38:77–79. (French.)—From analyses of shell piles at "anvils" (i.e., sites where thrushes extract the meats from snails, leaving the shells behind), the author has identified 8 previously unknown molluscs in the diet of the Song Thrush (*Turdus philomelos*): 1 lamellibranch (*Dreissena polymorpha*) and 7 gastropods (*Pomatias elegans, Paludina fasciata, Limnea* sp., *Oxychilus* sp. [perhaps *O. lucidus*], *Limax* sp., *Theba pisana,* and *Helix pomatia*). This is apparently the first time that a lamellibranch has been reported in the diet of a thrush. Data were collected since 1973 and some of the author's sample sizes are impressive (e.g., 2327 shells in one lot from marshy habitat).

The gastropod snail (*Cepaea nemoralis* was the dominant prey item in the diet of thrushes in marshes (>97% of the shells), wet meadows (97%), coastal dunes (90–100%), deciduous woods (80%), and calcareous slopes (60%). However, it was replaced by *C. hortensis* at anvils on chalk cliffs to the south of the Picardy coast. The latter species was also common at feeding stations in deciduous woods.

Shells of the gastropod *Monacha cantiana* were also commonly found at anvils in wet meadows, calcareous slopes, and marshes. Samples from the last-named habitat contained a few *H. aspera, H. pomatia, Oxychilus* sp., *Limnea* sp., and *P. fasciata*. *T. pisana* was only a minor dietary item of birds foraging on coastal dunes, even though this snail's density was at least 100 times that of *C. nemoralis,* the major item in the diet at such sites. *P. elegans* occurred in samples from calcareous slopes; *H. aspera* in samples from chalk cliffs; *Limax* sp. in the stomach contents of a bird from Brutelles. One small shell pile (n = 74 items) at Sailly-Laurette consisted of *P. fasciata* (57%) and the striped mussel, *D. polymorpha* (43%).—Michael D. Kern.

35. **Foraging success of adult Starlings *Sturnus vulgaris*: a tentative explanation**

for the preference of juveniles for cherries. J. Stevens. 1985. Ibis 127:341–347.—In a variety of birds (oystercatchers, pelicans, herons, egrets, and terns) the adults have been found to be more efficient foragers than juveniles. This difference includes both search and capture of prey. In starlings feeding on insects in the ground, a comparison of adults with juveniles revealed that juveniles were less successful using every type of pecking behavior. It appears that the greater the skill needed to catch prey, the less successful were juveniles in comparison with adults. Moreover, the difference in pecking success was large for catching techniques, such as grubbing, that required a strong and large bill. It appeared that prey capture by juveniles improved as the bill growth increased. Thus we are back to a fundamental problem of behavioral development during growth: is the improvement due to maturation (growth of neurons, muscles, etc.) or practice? Answering this question was not the intention of the author, but rather solving the problem of what are the consequences of lower foraging efficiencies for juveniles.

Juvenile starlings are known to cause a disproportionate amount of damage to the cherry crop in Europe. The author suggests that this preference for cherries may result from the younger bird's reduced foraging efficiency. Since juveniles are unable to gather enough animal food, they try to compensate by eating the more accessible cherries. My own observations suggest this may be true for American Robins (*Turdus migratorius*), since a disproportionate number of juveniles also take fruit in the fall. Thus some avian frugivory might result from default—reduced foraging efficiency makes accessible fruits more attractive.—J. M. Wunderle, Jr.

36. Ecological, morphological, and bioenergetic correlates of hunting mode in hawks and owls. F. M. Jaksić and J. H. Carothers. 1985. Ornis Scand. 16:165–172.—Given an avian predator's foraging mode, what can be said about its morphology and foraging ecology? In an attempt to answer this question, the authors combined food habits data from 5 assemblages of sympatric raptors and categorized each species (24 falconiforms and 10 strigiforms) as either a sit-and-wait (SW) or an active-search (AS) forager. They also calculated linearized wing loading, diet breadth, and a ratio of mean prey mass to mean body mass for each raptor species.

As expected, hawks and owls with light wing loading tended to be AS foragers and those with heavy wing loading SW foragers. One might also expect SW foragers to have a narrower diet and take relatively larger prey than would AS ones. However, foraging mode was a poor predictor of diet breadth and mean prey size. The authors state that diet breadth and prey size might reflect foraging mode within raptor subfamilies, but their sample of raptor species was too small to test this idea. By necessity, diet breadth and mean prey size were calculated from very small samples of prey in 11 cases ($n < 30$ prey items!), and data were lumped from widely separated study areas with very different availabilities of types and sizes of prey. The ideas put forth in this paper need to be tested with large samples of prey items for all species within single assemblages of sympatric hawks and owls.—Jeffrey S. Marks.

SONGS AND VOCALIZATIONS

37. Comparison of Whinchat (*Saxicola rubetra*) and Stonechat (*S. torquata*) song. [Der Gesangsaufbau von Braunkehlchen (*Saxicola rubetra*) und Schwarzkehlchen (*S. torquata*) im Vergleich.] G. Schwager and H. R. Guttinger. 1984. J. Ornithol. 125:261–278. (German, English abstract.)—The songs of Whinchats and Stonechats from West Germany were compared to these species' songs from other European locations. Both species have large repertoires, with about 100 elements which can be divided into 12 song-types. Whinchats changed song-types between phrases regularly, while Stonechats usually used the same song-types consecutively. The vocalizations of the Whinchat fell between 2.5 kHz and 8 kHz, while the Stonechat used a narrower range of frequencies, 3 kHz.—Robert C. Beason.

BOOKS AND MONOGRAPHS

38. Dynamics and migration of birds. [Dinamica şi migraţia păsărilor.] Victor Ciochia. 1984. Editura Ştiinţi fică şi Enciclopedică, Bucureşti, Romania. 346 pp. [Romanian.] No price given.—This modestly produced book contains a great deal of information about bird banding, including capture techniques, some of which have not been described in North American references. The author surveys the banding techniques in general and provides useful advice on topics such as recording of data, field measurements, weighing, placing the band, etc. Ageing and sexing are discussed at length. These sections are abundantly illustrated. The most important part of the book (pp. 88–328) deals with the identification of birds in the hand. Illustrations are provided to assist with difficult birds, and include, where needed, alar or caudal formulae. The bibliography is not extensive, but covers adequately the field of migration, particularly in central Europe. In spite of the fact that I failed to find any information on populations, this book will be useful to banders, particularly the section on techniques, if the reader can understand Romanian.—Henri Ouellet.

39. The Starling. C. Feare. 1984. Oxford Univ. Press, Oxford. 315 p. $27.50.—Christopher Feare, well known for his work on the behavior and ecology of agricultural bird pests, does a good job of pulling together many facets of starling biology, although this book is most thorough for the European literature. In the introductory chapter, Feare traces the evolutionary development of the family Sturnidae from its frugivorous, hole-nesting ancestors of the Far East, to modern representatives that have tended toward a ground-dwelling omnivorous existence. Aside from this chapter, Feare focuses almost entirely on the European Starling (*Sturnus vulgaris*), exploring the many, often subtle, adaptations that have led to the success of this species.

In the second chapter, Feare describes the morphology of the European Starling, pointing out a variety of adaptations the species has for feeding, mate attraction, social status determination, and avoidance of predation. The distribution of its 12 subspecies is also considered, emphasizing the tremendous geographic range the species occupies. Feare notes that slightly less than 30% of the Earth's land surface, excluding Antarctica, is occupied by European Starlings.

Other topics include diurnal and annual rhythms of the European Starling. Here, Feare explains how changes in photoperiod regulate the secretion of various hormones which ultimately effect the starlings annual cycle. For instance Feare suggests that the release of gonadotrophic hormones from the pituitary gland, stimulated by changes in day length, largely determine the onset of reproductive activity. Other events of the starling's annual cycle detailed include weight changes, molt, and migration. Feare doesn't hesitate to point out that some aspects of starling migration and diurnal rhythms are not yet understood, and encourages further research in these areas. The apparent lack of fidelity to winter feeding areas by migrating starlings is one such area.

In succeeding chapters Feare discusses starling reproduction, modes of communication, feeding habits, habitat use, roost formation, and mortality. These topics are supported by numerous data sets, although most data are taken from studies done in Britain. For each topic, Feare proposes hypotheses which might explain different phenomena related to starling biology. For example, in his chapter on modes of communication, Feare speaks of bill-wiping (when both sides of the bill are wiped on a twig or any other suitable structure) as an indicator to other birds that feeding has stopped. Thus if a bird is seen bill-wiping, it indicates to a feeding bird that the individual is no longer a competitor for the available food supply, and it would therefore be a waste of time and energy to attempt to drive it away. According to Feare, bill-wiping has also evolved into a submissive act that may allow subordinate individuals the opportunity to show aggressors they are no longer competing for a particular resource. A second example is found in the chapter on "gatherings." Here Feare follows other recent authors in suggesting that formation of huge communal starling roosts is an adaptation to enhance information exchange between birds concerning the whereabouts of good food sources. He considers the reduction of metabolic losses at night and protection from predation as secondary adaptations.

The final chapter deals mostly with relationships between European Starlings and man. Emphasis is on damage to cherry orchards, winter-sown cereals, and grain used for cattle food. This information is important to agronomists and biologists in their attempts to control such damage. Man has generally been unsuccessful at protecting crops from starlings and controlling the numbers of starling populations as a whole. Feare makes it clear that the European Starling is a species to be reckoned with.

This book is geared toward anyone interested in starling biology and cavity-nesting birds in general. Many useful illustrations supplement the text, although a few of the original graphs are unaccompanied by explanatory data. A good literature review allows Feare the flexibility to state numerous examples that answer many questions, and also generate numerous new questions related to starling biology.

I was disappointed that very little was said about competition between European Starlings and other cavity-nesting species for shelter and nest sites. This is an extremely important facet of starling biology, especially in North America and other areas where starlings have been introduced. Studies by various researchers illustrate that, at least in North America, starlings have had an impact on the success of many native cavity-nesting species. The European Starling's ability to compete with native cavity-nesters in North America may partially explain why over one-third of the world's population resides on this continent.

My criticisms, however, are minor. We are fortunate that Christopher Feare took the time to compile this wealth of information, which will undoubtedly facilitate the future study of the species.—Danny J. Ingold.

40. Illinois Birds: Vireos. J. W. Graber, R. R. Graber, and E. L. Kirk. 1985. Illinois Natural History Survey Biological Notes No. 124. 38 p.—This excellent monograph is the tenth in a series devoted to the birds of Illinois. Its format and content are identical to other publications in this series. Of the seven species of vireos recorded from Illinois, only the Philadelphia (*Vireo philadelphicus*) is strictly a transient. Species accounts consist of information on the timing and relative abundance during both migratory periods for each region of the state as well as data on habitat preferences. For breeding species, distribution and abundance, habitat preferences, nesting cyles, and food preferences are also discussed. All of this information is derived from studies conducted within Illinois. With the exception of the Solitary Vireo (*V. solitarius*) which has only nested at one location in the state, very complete data on the breeding biology of each species are provided.

The authors have continued their tradition of thoroughly prepared monographs on the birds of Illinois. The wealth of information will prove to be valuable for anyone interested in this family.—Bruce G. Peterjohn.

41. Birds of the Nashville area. Fourth edition. H. E. Parmer, D. F. Vogt, C. G. Drewry, P. B. Hamel, and S. J. Stedman. 1985. Nashville Chapter of the Tennessee Ornithological Society, P.O. Box 24573, Nashville, Tennessee. 64 pp. $4.00 (paper).—The first edition of this local guide was published by Parmer in 1966, with subsequent editions in 1970 and 1975. Since the third edition, 22 species have been added officially or provisionally to the list which now totals 306 species. The increase is attributed largely to an increased interest in birds in the area, but it should also be noted that the area covered increased from the second to third editions and again from the third to the fourth. The area covered by the first two editions was a circle 40 km (25 mi) in diameter and centered on Nashville. For the third edition, the circle was extended to 48 km (30 mi) diameter. The fourth edition extends the boundaries irregularly and primarily to the east, following county lines and highways. Introductory material describes the physiography, vegetation, and climate, defines status terminology used, and lists contributors and localities mentioned. Species accounts include status, known localities, extreme dates, and other details. A bar graph illustrates periods of expected occurrence, possible occurrence, and extreme and unusual dates. A centerfold map shows locations of major localities and boundaries of areas included in each edition—although the boundary lines are not specifically labelled or identified in the legend.

This is a fine example of a continuing local avifaunal inventory. I have no doubt that the original efforts of H. E. Parmer have not only done much to further our knowledge of Tennessee birds, but also to stimulate interest in others. I hope other local organizations will take on similar projects.—Jerome A. Jackson.